Jing Yang receives NSF Early Career Award

Arkansas Newswire, February 24, 2015

Jing Yang, an assistant professor in the College of Engineering at the University of Arkansas, received a $500,000 Faculty Early Career Development Program award from the National Science Foundation to continue developing sensing and transmission systems for energy-harvesting, wireless sensor networks.

Energy-harvesting, wireless sensor networks are systems that include collaborating embedded devices, such as sensor nodes, that are capable of sensing, computation and communication. They are often used for application-specific analysis, such as environmental monitoring in homes or factories. The sensors perform long-range communications that are impossible or impractical to implement with the use of wires.

These networks use energy from the ambient environment – including solar power, but also sources such as vibration and wind – to collect and transmit vast amounts of data. However, they struggle to maintain reliable collection, transmission and analysis of data because the energy supply for this process can be random, scarce and inconsistent.

Yang is working on a set of algorithms that will lead to the design of new systems that can dynamically and intelligently allocate scarce energy to collect and transmit the most informative data samples.

She uses two distinct but related approaches, one driven by energy, the other by data:

For the energy-driven approach, the statistics of the energy-harvesting process are exploited to coordinate sensor data collection in large-scale systems and govern data transmission under stringent delay constraints.

The data-driven approach utilizes the characteristics of underlying sensing signals and the recent progress on high-dimensional data analysis and machine learning to adaptively allocate scarce energy resources to collect and transmit the most important sensor data.

Yang’s work will enable perpetual, large-scale wireless sensor networks that match energy supply and demand in data-intensive applications. The research will improve the design and deployment of sensor networks that perform critical functions related to health care and environmental monitoring, surveillance and disaster relief. The work eventually could be adapted to smart-grid applications and micro-grid technologies with renewable energy sources.

Faculty Early Career Development Program, better known as CAREER, is the National Science Foundation’s most prestigious award in support of junior faculty who exemplify the role of teacher-scholars through outstanding research and education and integration of both within the context of their institution’s mission. Research activities supported by CAREER awards build the foundation for a lifetime of leadership in integrating education and research.

DEPARTMENT MOVES UP TO NO. 83 IN US NEWS LIST

Arkansas Newswire, March 11, 2015

Several graduate programs at the University of Arkansas rated well in the 2016 edition of U.S. News & World Report Best Graduate Schools. Within the College of Engineering, the electrical engineering graduate program showed the greatest increase in the college, rising almost 20 places, from No. 102 to No. 83 for all universities, with an even larger increase among public institutions, from No. 85 to No. 52. Industrial engineering also rose among public institutions, from No. 26 to No. 24, and mechanical engineering moved from No. 85 to No. 76 among public institutions. Chemical engineering was ranked No. 94 overall, an improvement of six places, and No. 58 among public institutions. Computer engineering gained two places overall, ranking No. 95 and No. 59 among public institutions. The biological engineering program was ranked No. 19, No. 18 among public institutions. The biological engineering program was ranked No. 19, No. 18 among public institutions.

The College of Engineering was ranked No. 107 overall, and No. 69 among public institutions.

In addition, The U of A’s online engineering programs, including a Master of Science in Engineering degree and a Master of Science in Electrical Engineering degree, were ranked No. 29 of 75 ranked online graduate engineering programs and No. 23 for engineering programs at public universities by U.S. News & World Report.

“I am very pleased with the performance of these programs,” said John English, dean of engineering. “Over the past couple of years, we have been identifying and focusing on our strengths as a college, and the U.S. News and World Report rankings are just one of the ways we can quantify our success in this area. We’ve recently hired several outstanding faculty members, and the whole college has enthusiastically embraced the idea of continuous improvement and of publicizing our successes. We look forward to these efforts having even more of a positive effect on the rankings.”
Letter from the Department Head

Dear Alumni, students, friends of the department, and colleagues,

First of all, I trust that you are all doing well and the winter snow has started to melt in your part of the world, particularly, for those friends in the northern states that have had more than their fair share. We were all happy seeing the first daffodils coming out of the ground.

We had some very good news about the department. The US News & World Report rankings for graduate programs came up with the department moving to the 83 position out of the 102 place when considering all 187 ranked EE departments. The department was ranked 52 when only considering public institutions. We must be cautious since the departmental rankings are based solely on perception by engineering deans and heads of electrical engineering departments. Nevertheless, these are great news and reward for the faculty, the staff and the graduate students that with their efforts helped the department reach sufficient visibility to attain these important goals. Our research centers and laboratories are getting national and international reputations, and listening to our visitors say “Wow! I did not know you have this in Arkansas” is becoming a recurring comment.

We congratulate Dr. Jing Yang for being awarded the prestigious CAREER award from the National Science Foundation for her $500,000 proposal to international reputations, and listening to our visitors say “Wow! I did not know you have this in Arkansas” is becoming a recurring comment.

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We congratulate Dr. Jing Yang for being awarded the prestigious CAREER award from the National Science Foundation for her $500,000 proposal to develop a set of algorithms to energy-harvesting, wireless sensor networks.

Dr. Vijay Varadan retired in December 31 2014 from UA retaining the status of adjunct distinguished professor, and accepting the position of Professor of Neurosurgery at Penn State Milton S. Hershey Medical Center.

The department will continue working with the COE dean’s office to have 2015 summer camps for 6th to 12th graders. Your children or grandchildren will enjoy these camps which are becoming very popular; please, visit http://engineering-camps.uark.edu/.

The above achievements would not have been possible without the support of our ELEG alumni that helps us in many ways whether hiring and mentoring our graduates to donating funds for supporting department endeavors. We are very grateful for your support, so we would like to hear from you whether it is a suggestion to improve our undergraduate and graduate programs, or a promotion that you received. Your feedback is part of our continuous improvement process to continue moving forward. Please, let Mrs. Connie Howard at cjhowar@uark.edu or send me an email.

Kind regards,

Juan Carlos Balda

R & D 100 AWARD - 2014

A team led by Arkansas Power Electronics International has won a 2014 R&D 100 award for the development of a battery charger for the Toyota Prius. A collaborative research partnership, the project includes four other entities — Toyota Motor Engineering & Manufacturing North America Inc., our National Center for Reliable Electric Power Transmission; Oak Ridge National Laboratory and Cree Inc. The collaboration is funded by the Advanced Research Projects Agency in the U.S. Department of Energy.

The Mixed-Signal group worked closely with Oak Ridge National Laboratory and Cree to develop the first fully-integrated gate drivers in Silicon Carbide in support of this effort.

In 2009, APEI, the University of Arkansas and Rohm Semiconductors (Japan) received another R&D 100 award for a high-temperature silicon carbide power module. The module can greatly reduce the size and volume of power electronic system.

GREEN AND VICTER REACH OUT TO ARKANSAS STUDENTS

Staff and students working with the NSF EPSCoR Centers VICTER and GREEN have been working hard this spring to bring STEM Outreach to the students of Arkansas. Mr. T.A. Walton, Mr. Chris Farnell, and Ms. Staci Brooks have visited more than 600 students across the state so far this year.

Mr. Walton, the VICTER Center Outreach Director, visited six middle and high schools in eastern and southern Arkansas in February, as well as attending the UAPB Science Day. UAPB is one of the collegiate partners of VICTER, and this was the third time the VICTER Wonders of Wattage (WoW) Mobile Lab has attended the Science Day.

Mr. Farnell, the GREEN Outreach representative and Ms. Brooks, a master’s candidate visited with students at the Arkansas EAST Conference in Hot Springs, Arkansas in March. They presented several projects that were built by students at the University of Arkansas, discussed their experiences and answered students’ questions. Also, they hosted a booth, showing other demonstration units from the WoW Mobile Lab.

Our outreach program continues to grow, and we are looking forward to visiting and hosting many more schools, all the way from elementary students through undergraduate students. For more information, please contact Mr. T.A. Walton at tawalton@uark.edu.

Mr. Walton demonstrates a WOW Mobile Lab demo to students at Clarendon High School

Show your pride as an Arkansas alumni, keep up with what’s happening, update your contact information and stay in touch with other alumni through the Arkansas Alumni Association. www.arkansasalumni.org.
ALAN MANTOOTH NAMED ARKANSAS RESEARCH ALLIANCE FELLOW

On Dec. 3, the Arkansas Research Alliance (ARA) announced that Alan Mantooth, Distinguished Professor of Electrical Engineering and holder of the Twenty-First Century Endowed Chair in Mixed-Signal IC Design and CAD, was one of its five inaugural fellows. “The Fellows are proven research leaders and highly regarded at their respective universities, and they share the same vision as the ARA Scholars: to impact Arkansas through innovative research with commercial applications,” stated Jeff Gardner, president and chief executive officer of Windstream and chairman of the ARA board of trustees. Recently, Mantooth’s team was acknowledged for the second time in the last five years with an R&D 100 Award, for an electronic charger they designed for Toyota’s plug-in electric vehicles. Financial resources for his research have included awards from the National Aeronautics and Space Administration, the Defense Advanced Research Projects Agency, the Office of Naval Research, Department of Energy, the National Science Foundation, and more than 50 companies. Mantooth has also dedicated a part of his career to the transfer of research results into daily use by founding or nurturing three startup companies in Arkansas. U of A Chancellor G. David Gearhart introduced Mantooth at the announcement event. “Dr. Mantooth is a true academic all-star, and wears a number of hats on our campus,” said Gearhart. “Over the course of 16 years, he has worked with nearly 90 graduate students and personally mentored more than 150 students, overseeing in excess of $50 million in research.

ALUMNI NEWS

Hugh Brewer Jr., B.S.E.E.’59, received the Community Service Award from the Arkansas Alumni Association in October 2014. The award is given to recognize selfless and extensive service by alumni to their community and to humankind. Mr. Brewer began working for Upchurch Electrical Supply Company in 1970, serving as the owner and president from 1982-1999 when he retired. He has been active in the Fayetteville community for many years, serving on numerous boards and committees, including the Arkansas Alumni Association Board of Directors. Hugh also serves as an advisory director for Habitat for Humanity.

William “Bill” A. McVey, Jr., P.E. was recently appointed to a third term on the Oklahoma State Board of Licensure for Professional Engineers and Land Surveyors by Governor Mary Fallin. Mr. McVey is President of PSA Consulting Engineers, Inc. – an Oklahoma City based consulting engineering firm which primarily practices in the disciplines of mechanical and electrical engineering, and has extensive experience in the administration of Architectural, Structural, Civil, and Environmental projects as the prime professional. In the photo above, Bill (left) is being presented an award of appreciation by Past Board Chair George Gibson, P.E. for completing his second term.

Sadly, we have lost several alumni in the past several months. Glenn Bandy passed away on November 18, 2014. Charles Jinks was killed in a plane crash in his personal aircraft on December 18, 2014. John Marschewski passed away on February 5, 2015. James Boyd Pearson died on October 28, 2012, and Lloyd Wade Sherrill passed away on November 24, 2014.

UA STUDENTS TAKE HOME HONORS AT IEEE APEC 2015

Each year for the past five years, faculty, staff and students working at the University of Arkansas and our partner schools attend IEEE’s APEC (Advanced Power Electronics Conference). This conference is one of the most prominent international conferences for power electronics professionals and we are proud to represent our work, our universities and our research centers. This year, eight students from the University of Arkansas attended the conference. They are undergraduate and SURF grant recipient Ethan Williams; master’s candidates Roderick Garcia and Haoyan Liu; and doctoral candidates Yusi Liu, Shartrek Munasib, Sayan Seal, Janviere Umuhoza, and Yuzhi Zhang. In addition, the NSF Center of Excellence on GRid-connected Advanced Power Electronic Systems (GRAPEs) hosted a booth in the conference’s exhibition, displaying working prototypes and devices developed by students in their research efforts.

Our students performed outstandingly this year, with three of the six presentations and posters receiving awards. Sayan Seal’s poster, titled “Nanosilver Preform Assisted Die Attach for High Temperature Applications”, received the Best Poster award for his poster session. Yuzhi Zhang also won Best Poster during his poster session, for his poster “Realizing an Integrated System for Residential energy Harvesting and Management”. Finally, Roderick Garcia’s presentation, “An Evaluation of Selected Solid-State Transformer Topologies for Electric Distribution Systems” was awarded Best Presentation in his section. Congratulations to our students for their great work and we look forward to continued success in the future!

PERSONNEL UPDATES

Since the newsletter last spring, there have been several personnel changes in the Department:

Terry Martin, who has previously served in both the Electrical Engineering Department, and the College of Engineering Dean’s Office, was named Vice Provost for Academic Affairs, effective June 1, 2014.

Dr. Silke Spiesshoefer joined the department as an Instructor and Fort Smith Program Coordinator in June 2014.

Dr. Hameed Naseem is the new Graduate Coordinator for the Department. Dr. Magda El-Shenawee served in that role June-December 2014.

Mrs. Tana Fouse became the Assistant to the Graduate Coordinator in June 2015.

Dr. Vijay Varadan retired effective December 31, 2014. He accepted a position at the Penn State Milton S. Hershey Medical Center to continue his previous work on Neurological disorders including surgery on Parkinson and Alzheimer patients.
ALUMNI GIVE BACK TO DEPARTMENT BY ASSISTING FACULTY AND STUDENTS

The Electrical Engineering Department has a wonderful group of alumni who give back to the Department in various ways. Some are instrumental at their current places of employment in hiring new graduates, some serve on the Dean’s Advisory Council for the College of Engineering, some serve on various committees within the Department and/or College, and some give back financially. All of these forms of service are extremely important to the Department and College.

Those who give back financially enable faculty to further their research by providing funding for start-up packages for new faculty, travel support to attend conferences, necessary equipment for research and teaching labs, and support for developing new courses. Those funds also make it possible for the Department to bring in outside speakers to present seminars on various research areas, which helps promote possible collaboration efforts with other Universities and businesses.

Students are supported through scholarship, travel funds, and student organization funding. Just within the past year, one undergraduate student attended the Society of Women in Engineering Conference in Los Angeles, California, and came back “fired up” about the organization. One PhD student was able to attend and present a paper at the IEEE symposium in Tampa, Florida, and another attended an IEEE Conference in North Carolina. Thirty-seven students received scholarships during the 2014-2015 academic year, totaling $50,500.

Alumni of all ages are “giving back” to the College and Department. The Engineering Early Career Alumni Council (ECAD) was recently formed, made up of a group of early career College of Engineering alumni who are committed to the vitality of the College of Engineering at the University of Arkansas. Three ELEG alumni who have graduated within the last five years, are serving on that new council. They are dedicated to aiding the Department, College and University in reaching their mission and goals.

From the students, faculty and staff of the Electrical Engineering Department, we say a big “THANK YOU” to all our alumni.